

ADDITIONAL ARTICLES: THYROID

YOUR THYROID IS HUNGRY FOR SEAWEED

By Ryan Drum PhD

One in 10 women in this country have been diagnosed with thyroid problems. Some endocrinologists believe that one in four women have an underactive or overactive thyroid. One reason may be because our thyroid glands are twice as large as those in men, creating a greater need for iodine. When we're under stress, our thyroids become even larger and more active, causing us to need even more.

This recent epidemic of thyroid problems appears to be due to a decline in dietary iodine. In 1940, our typical American diet contained 500-800 micrograms of iodine. By 1995, that amount had dropped down to 135 micrograms. But insufficient iodine intake isn't the only reason for low iodine. Thyroid problems are also caused by two other factors: exposure to substances that interfere with iodine levels, and an increased exposure to harmful radioactive iodine.

But don't think that all iodine is the same. It's not. There are two forms: iodine 127 (safe, natural dietary iodine) and iodine 131 (a harmful radioactive by-product of nuclear energy). Your body absorbs and retains any kind of iodine, depositing most of it in your thyroid gland or breasts. If you're deficient in the safe form of iodine, you'll absorb more radioactive iodine 131. But if you have enough dietary iodine, you won't absorb as much of the radioactive kind. The good iodine blocks the harmful type. Seaweed provides the dietary iodine you need for better thyroid function, and protects you from the harmful effects of radioactive iodine.

All of us have been exposed to radioactive iodine. Since 1945, radioactive material has been released into the air from nuclear testing and nuclear power plants all over the world. The ordinary day-to-day operations of these nuclear plants put harmful radioactive iodine into our atmosphere. Since we can't avoid it, we need to block its absorption. This exposure to iodine 131 is very possibly the origin of the increased amount of thyroid disorders we're seeing today. The regular consumption of seaweed may restore your thyroid function.

But iodine insufficiency goes far beyond its effects on the thyroid gland. Some of the iodine in your body is concentrated in breast tissues. When radioactive iodine breaks down in your breasts, it can contribute to breast cancer. Dietary iodine blocks the absorption of this harmful iodine. Researchers are finding that women with extremely low iodine concentrations are at a higher risk for breast cancer. Conversely, getting sufficient iodine seems to protect against this disease.

There's a strong association between low dietary iodine and an increased risk for breast, endometrial, and ovarian cancer. Low iodine can increase the production of estrogens, and your lifetime exposure to estrogens increases your risk for all of these cancers.

Interfering with Iodine

Anything that contains chlorine, fluoride, and bromine, like water, whether it's used internally or externally, interferes with iodine molecules and causes your body to excrete the iodine it needs so badly. Chlorine is present in most city water supplies. Unless you de-chlorinate your water, you are being exposed to thyroid-lowering gases whenever you bathe, shower, or have a drink of water. You can quickly and easily remove chlorine in your shower with a number of products, such as the Rainshow'r showerhead and the bath with the Rainshow'r Crystal Ball. (800-728-2288). If you have a hot tub, you probably use chlorine or bromine to keep it free from bacteria. Both affect your iodine levels. Bromine is also found in some pesticides – another reason to eat organic food whenever possible – as well as dough conditioners (bread products).

Aspirin, blood thinners, and steroids all increase iodine excretion and can result in iodine deficiency thyroid problems. If you're taking any of these medications, ask your doctor to evaluate you for low thyroid function (hypothyroidism).

Adding seaweed:

Seaweed is a food. This means you can eat as much as your body wants. For an underactive thyroid, uses 5-10 grams of mixed brown and red seaweeds daily.

Brown seaweeds – higher in iodine – include all kelps, Hijiki. Red seaweeds include dulse, nori, Irish moss, and Gracillaria. Nori, used to make sushi, is easy to find many health food stores. Some is toasted and packaged in small packets. It's delicious, but not particularly high in iodine. Most forms of kelp have 500-1500 ppm (parts per million) of iodine; nori has 15 ppm. Toasting doesn't affect seaweed's iodine content, so eat it in whatever form you like best. You can add powdered seaweed to your food; toast small pieces of seaweed for a tasty snack; or add larger pieces of a variety of seaweed to soups, grains, or vegetables.

Where to find seaweed

All types of seaweed are edible, but not all of them taste good and not all are safe to eat. Some come from polluted waters. Get them from reliable sources – directly from people who harvest them from the cleanest available waters, or from your local health food store.

Try various types of seaweed, either as a snack or added to foods during or after cooking. Seaweed should be an enjoyable addition to your diet, not an unpleasant experience. If you simply don't like its taste, you can get it powdered, in capsules. Seaweed is a gift from the sea. It's also a gift to your thyroid and breasts.

Drum, Ryan, PhD. "Botanicals for thyroid function and dysfunction," Medicines From the Earth: Official proceedings, 3-5, June 2000.

THE BASAL TEMPERATURE TEST

By C. Emery

The Basal Temperature Test is not to be used as a replacement for a proper medical assessment. Instead it **can help you determine whether you may have a thyroid imbalance and a low functioning thyroid gland in particular**. Low thyroid function can cause many symptoms ranging from **fatigue** to **difficulty losing weight**.

Because the thyroid gland reflects the body's metabolic rate and heat is generated during metabolism, assessing body temperature can give clues regarding the function of the thyroid gland.

PROCEDURE

1. Shake down a thermometer until the mercury falls below 95 degrees Fahrenheit if using an older thermometer. Place it by your bed at night when you retire.
2. Upon waking, before getting up (yes, even to use the bathroom) place the thermometer under your armpit for 10 minutes. Digital thermometers may automatically stop before that. That's fine. Try to lay in bed as still as possible during this time. Rest and close your eyes. Don't get up until after the 10 minutes have passed or until a digital thermometer has registered your temperature.
3. Record the temperature, time, and date.
4. Conduct the same test for at least three mornings at the same time each day.

Assessing Your Basal Temperature Test

A healthy resting temperature ranges between 97.8 to 98.2 degrees Fahrenheit or 36.6 to 36.8 degrees Celsius. Natural fluctuations can occur during menstrual cycles. If you are still menstruating, perform the test on the second, third, and fourth days of the menstrual cycle.

Post-menopausal women or men can conduct the tests any days of the month.

If your temperature is consistently lower than the range indicated above for at least three days, this may be an indication of hypothyroidism. Conversely, temperatures consistently higher than this may indicate hyperthyroidism but can also suggest a possible infection. If so, you should see a physician.

If your doctor wants to conduct blood tests to confirm your results, ask him or her to test for thyroid-stimulating hormone (TSH), free T3, free T4, and thyroid antibodies. All four tests give a more accurate picture of the health of your thyroid gland than testing solely for TSH like many doctors do. Actually, many people test normal for their TSH even when they have all the symptoms of hypothyroidism.

What Your Thyroid Lab Results Really Mean

By Amy Myers, MD

One of the questions I am most frequently asked is ‘what are the most important thyroid labs to check in order to assess your thyroid’s function?’ This, along with what your thyroid lab results really mean, are two of the most important topics to understand in order to know if you truly have thyroid dysfunction or not. And let me tell you, there is a lot of misinformation on the internet and in the conventional medicine world surrounding these two topics.

In this article I’ll explain what each thyroid blood test measures, why your doctor should check them, and what the optimal reference ranges are to ensure your thyroid is functioning optimally.

TSH – Thyroid Stimulating Hormone

The hypothalamus, which is responsible for managing hunger, thirst, sleep, hormones, and body temperature, among other important functions, continuously monitors the level of thyroid hormones present in your bloodstream. If it determines that energy levels are low, it sends out TRH, Thyroid Releasing Hormone, to your pituitary gland. Your pituitary gland then releases TSH Thyroid Stimulating Hormone, which is sent directly to the thyroid in order to produce more thyroid hormone (T4). As a result, your TSH level is actually an indication of what your pituitary is doing based on your hypothalamus’ feedback loop, rather than how your thyroid is actually functioning. Because of this negative feedback loop, the meaning of the results are often counterintuitive and confusing.

- **If TSH is high** – this can be a sign that you are under-producing thyroid hormones and you are hypothyroid
- **If TSH is low** – this can be a sign that you are over-producing thyroid hormones and are hyperthyroid, or that you are on too much supplemental thyroid hormone. Supplemental T3 or natural desiccated thyroid hormone with T3 can artificially suppress your TSH, so in the absence of symptoms it could be perfectly normal.
- **If your TSH is 'normal'** – i.e. your TSH falls within the normal reference range, this could indicate that you do not have thyroid dysfunction. 'Normal' and 'optimal' levels have two very different meanings. So, if you still have symptoms and are in the 'normal'–not 'optimal'–range then you likely could have thyroid dysfunction

T4 – The Storage Form of Thyroid Hormone

Once TSH signals to your thyroid to ramp up production of its hormones, it produces the four different types of thyroid hormone – T1, T2, T3, and T4. The primary output of your thyroid is T4, which is a storage form of the hormone. It is circulated throughout the bloodstream and stored in tissues so that it's available when needed. I like to measure Free T4 (FT4) since it is unbound and able to act in the body.

- **If FT4 is high** – it can indicate an overactive thyroid or hyperthyroidism
- **If FT4 is low** – it can indicate an underactive thyroid or hypothyroidism

Free T3 – The Gas

When each local area of your body determines that it needs more power, it converts storage T4 into Free T3, which is the active form of the hormone. These hormones attach to receptors inside of your cells to power your metabolic processes, which is why I like to think of them as the gas.

- **If FT3 is high** – indicates that your thyroid is overactive or hyperthyroidism
- **If FT3 is low** – you may not be converting T4 to FT3 very well and you could have hypothyroid symptoms even if your TSH and FT4 are within range. This is one of the most common causes of low thyroid or hypothyroidism I have seen in my practice.

Reverse T3 – The Brakes

Your body also uses a portion of the T4 to create Reverse T3 (RT3), another inactive form of thyroid hormone. RT3 can attach to the receptors for Free T3 in order to slow down your metabolic processes. For that reason, I call RT3 the brakes.

- **If RT3 is high** – you are likely converting too much T4 to RT3 and not enough to FT3, which can cause hypothyroid symptoms even if your TSH and T4 levels are optimal. In addition, I look at something called a RT3/FT3 ratio and I like that to be less than a 10:1 ratio.

Thyroid Antibodies – Your Immune System’s Attack on Your Thyroid

The vast majority of thyroid conditions are autoimmune, which means your immune system is attacking your thyroid. The hypothyroid form of autoimmune thyroid is Hashimoto's and the hyperthyroid form is called Grave's Disease.

There are two main types of thyroid antibodies. Thyroid peroxidase antibodies (TPOAb) attack an enzyme used to synthesize thyroid hormones and are commonly elevated in both Hashimoto's and Graves' Disease patients. Thyroglobulin Antibodies (TgAb), attack thyroglobulin, which your thyroid uses to produce its hormones. These are typically elevated in Hashimoto's patients.

- **If your antibodies are elevated** – your immune system is attacking your thyroid

What Thyroid Levels Your Doctor Should Check

Most doctors only check your Thyroid Stimulating Hormone (TSH) levels. If you are lucky, they will test your Free T4 levels to see if you are low on the storage form of thyroid hormones. However, as we've just covered, there are many factors involved in optimal thyroid function, so those two levels alone don't tell the whole story. To get a complete picture of a patient's thyroid health and medication needs, I recommend ordering all of the thyroid tests listed below.

- TSH
- Free T4
- Free T3
- Reverse T3
- Thyroid Peroxidase Antibodies (TPOAb)
- Thyroglobulin Antibodies (TgAb)

The Optimal Thyroid Lab Ranges Your Doctor Should Use

Even if your doctor does order a complete thyroid panel, they're usually relying on "normal" reference ranges that are too broad and often inaccurate. When they created the lab reference ranges for a healthy thyroid they later discovered that they had included people who already had thyroid dysfunction!

Because of this, in 2003 the American Association of Clinical Endocrinologists recommended that the lab reference ranges become more narrow. Yet still today, most doctors and laboratories haven't updated their practices.

In my functional medicine practice, I have found that the ranges below are the ones in which my patients (and myself) thrive. I listen to my patients and take how they are feeling into account.

- **TSH** 1-2 UIU/ML or lower (Armour or compounded T3 can artificially suppress TSH)
- **FT4** >1.1 NG/DL
- **FT3** > 3.2 PG/ML
- **RT3** less than a 10:1 ratio RT3:FT3
- **TPO** – TgAb – < 4 IU/ML or negative